BULLETIN NO. 23.
(Bureau of Medicine and Surgery.)

[M. & S. No. 129655—1.]



# NOTES ON PREVENTIVE MEDICINE FOR MEDICAL OFFICERS UNITED STATES NAVY.

DEPARTMENT OF THE NAVY,
BUREAU OF MEDICINE AND SURGERY,
*Washington, D. C., May 3, 1918.*

## MENINGOCOCCUS CARRIERS.

(Notes from the laboratory, naval hospital, Chelsea, Mass.)

There have been 15 cases of cerebrospinal fever in the First Naval District from January 1, 1918, to April 20, 1918—4 in January, 5 in February, 6 in March, none in April.

Over 3,000 cultures were taken in a search for carriers among those associated with known cases. Of this number about 300 proved to be positive meningococcus carriers.

About 1,000 cultures were taken from groups of people, both in the Navy and in civil life, who had not come in contact with a known case of cerebrospinal fever. Of this number 49 were positive carriers. However, the above figures do not represent the true situation, as is indicated by the more critical examination of the data given below.

Careful examination of the carrier situation among those who have not come in contact with a known case shows that among students, both men and women, not in the Navy, about 1 to 2 per cent are carriers, that among recruits living in barracks and eating at a common mess, under good hygienic conditions, about 9 per cent are carriers, and that among recruits living in crowded quarters, such as Commonwealth Pier, 20 to 26 per cent are positive carriers, at least during cold weather.

Turning to groups of men who have come in contact with a definite case of cerebrospinal fever, investigation shows that when the men are not crowded, about 6 to 11 per cent represents the number of positive carriers. That about 20 per cent represents the average number found on ships, but that this percentage may go as high as 35 if there is overcrowding, or if the men are well chosen for their contact with a known case. On the other hand, the percentage may drop to as low as 8 if contact is doubtful or if there is no overcrowding.

It is also of interest to note that practically all of the cases of cerebrospinal fever in this district have come either directly or indirectly from Commonwealth Pier, where overcrowding has been marked and where the percentage of carriers has been persistently high. In this connection it is well to remember that carriers produce carriers as well as cases, and that the importance of taking cultures from contacts with known cases is to isolate positive carriers who might have been responsible for the passing on of a virulent organism to a susceptible person.

Further study of the carrier situation at the receiving ship, Commonwealth Pier, is worthy of note. In February 135 men from the cooking school were cultured. Their association with a known case was doubtful—8 per cent were positive carriers. A week later 176 men in guard details were cultured, after one of their number had come down with the disease; 22 per cent proved to be positive. In March 72 cultures were taken from a group of men in close association with two cases; 20 per cent were positive. About the middle of April 110 men who had had no association with a case, were cultured; only 2 were positive, or 1.8 per cent. There is no doubt that the warm weather was an important factor in this marked decline.

Carriers have been isolated on Gallops Island. They have been discharged after 4 negative cultures, taken at 5-day intervals. Many have showed persistently positive cultures over a period of 5 or 6 weeks. About 25 per cent have showed positive cultures after 1, 2, or 3 negatives. During 3 weeks of warm weather the number of positive cultures from a group of 100 carriers dropped from 50 to 10 or 12. The number of discharges increased from 29 in March to 71 during the first 15 days of April.

No case of cerebrospinal fever has occurred in the 4,000 people cultured. None of the 300 or more positive carriers has subsequently come down with the disease.

## OBSERVATIONS ON THE SCHICK TEST FOR IMMUNITY TO DIPHTHERIA.

(A summary of a report received from the naval training station, Great Lakes, Ill.)

Since September 18, 1917, 6,566 Schick tests have been made for the purpose of ascertaining the practical value of this test as applied to the naval service, as well as to immunize by the toxin-antitoxin mixture all those showing a positive reaction, and subsequently checking by further Schick tests the immunity established. Records were kept as accurately as possible and every effort made to eliminate possible sources of error. The toxin used in the test was furnished by the Department of Health of the City of New York. The technique employed was the same as that used by Park and Zingher of New York. The control test was made on the flexor surface of the left forearm, about 4 inches above the point at which the toxin was injected. However, the use of the control was abandoned as unnecessary as soon as the investigators became familiar with the appearance of the true reaction.

The equipment for the test consisted of two 1 c. c. Luer tuberculin syringes graduated in one-fifth and one-tenth of a c. c. The needles were 27-gauge, five-eighths or three-eighths inch long. Two medicine glasses, gauze, cotton, alcohol, and ether were also employed. One man can make 200 tests in one hour. The surface to be inoculated was scrubbed with ether. Cotton saturated with alcohol was used to wipe off the needles following the injection. For purposes of comparative study the degree of reaction was noted in the record as follows: For the minimum reaction "X," for the maximum reaction "XXXX," and for intermediate reactions "XX" and "XXX." The ages of the men tested were recorded, together with their places of residence prior to enlistment. Information was also noted as to whether they had previously had diphtheria and whether antitoxin had been used either as a curative measure or as a prophylactic. Readings were first taken at the end of 24, 48, and 72 hours. Experience soon taught, however, that reactions could be most accurately read at the end of 72 hours, because in many instances they had not reached their full intensity until that period had elapsed, in addition to which the pseudoreaction had disappeared sufficiently to avoid confusion. In a good many instances a test which is negative at the end of 24 hours will show positive at later readings. As examples: Out of a group of 158 persons, mostly children, 18 who gave negative readings at the end of 24 hours were found to have developed a positive reaction at a later inspection. Out of a group of 336 men, 71 who gave negative findings at the 24-hour readings, later developed a positive reaction. During an epidemic when rapid results are desired, it may be necessary to make the readings at 24 hours, but all showing a negative reaction should be reinspected.

During the course of the work it was found that susceptibility to diphtheria in the individual varied greatly from time to time. Men who were found to respond negatively to the first test gave positive reactions when tested again 35, 75, and 102 days afterwards. This is shown in the following table:

| Number of men in group. | Number of men positive. | Days elapsing before second Schick's test was made. |
|---|---|---|
| 265 | 38 | 35 |
| 182 | 28 | 75 |
| 102 | 8 | 102 |
| 549 | 74 | ..... |

Of the above, in the group of 265 men, 38 gave "X" positive reaction after 35 days. In the group of 182 men, 28 gave positives, 2 of whom were "XX" positive after 75 days. In the group of 102 men, 1 gave "XXX," 1 "XX," and 6 "X" positives after 102 days. It was found that in all groups a tendency to increased susceptibility to diphtheria occurred in the months of January, February, and March, and that coincident with this there was likewise an increase in the incidence of diphtheria. These facts were studied in connection with the incidence of tonsillitis on the station, and it was found that the greatest amount of tonsillitis preceded the increase in the number of cases of diphtheria and also the high percentage of positive Schick reactions. It may be that tonsillitis is a contributing factor to the development of diphtheria, together with the other things associated with winter in a cantonment; namely, overcrowding, unsatisfactory ventilation, and the change of environment. The investigation also showed that the group of men who had previously resided in cities showed the least susceptibility

during December, January, and February, with very little difference in susceptibility in the group of men from the towns and country. During March all groups ran a high positive curve in very nearly the same percentage. The fact that the individual had previously had diphtheria or antitoxin, or both, seemed to have little or no influence on the curve of susceptibility. Age likewise seemed to be of no importance.

The observers arrive at the following conclusions:

1. According to the findings, as shown in this paper and those of Zingher, 72 hours after the intradermal injection is the earliest time to call a Schick reaction negative.

2. Schick's test under ordinary conditions is a reliable indication of immunity to diphtheria only at the time that the test is made; therefore it is of most value in an epidemic of diphtheria or in questionable throat and nasal conditions.

3. A person may show a negative Schick's test and if deliberately exposed to diphtheria develop the disease soon after the negative test.

4. Men from the cities are not quite as susceptible as those from towns and country.

5. A previous attack of diphtheria or the administration of antitoxin as a prophylactic or curative measure confers immunity for only a short period of time, as shown by Schick's test.

6. A person may show a negative reaction to Schick's test and at a later date show a positive reaction.

7. The season of the year seems to have something to do with the percentage of persons susceptible to diphtheria, more susceptibles being found during the months of January, February, and March, as shown by Schick's test, corroborated by the occurrence of a larger number of cases of diphtheria and the fact that a number of men who had previously shown a negative Schick's reaction gave a positive reaction during these months. For these reasons it appears that the use of Schick's test as a routine measure to indicate those that are permanently immune is of little value.

The following table shows the percentage of positive Schick reactions by months:

| | Men. | Per cent positive. |
|---|---|---|
| September | 715 | 42 |
| October | 1,932 | 44 |
| November | 1,383 | 33 |

These results were not classified.

| | December. | | January. | | February. | | March. | |
|---|---|---|---|---|---|---|---|---|
| | Men. | Per cent positive. | Men. | Per cent positive. | Men. | Per cent positive. | Men. | Per cent positive. |
| Cities | 208 | 43 | 290 | 30 | 260 | 60 | 472 | 81 |
| Towns | 143 | 54 | 187 | 53 | 153 | 67 | 137 | 82 |
| Country | 124 | 47 | 198 | 59 | 156 | 71 | 177 | 71 |
| Total | 475 | 47 | 675 | 45 | 569 | 74 | 786 | 78 |
| Those giving history of having previously had diphtheria and antitoxin | 12 | 37 | 35 | 46 | 11 | 81 | 11 | 81 |
| Those giving history of having previously had diphtheria | 5 | 32 | 10 | 90 | 8 | 86 | 25 | 84 |
| Those giving history of having previously had antitoxin | 5 | 57 | 15 | 60 | 4 | 50 | 25 | 72 |

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The U. S. S. (transport) reports that the trip just completed has been very interesting. There occurred 12 pneumonias with but 1 death. One patient with septicemia died. Practically all of the pneumonias and the septicemia (together with 2 cases of otitis media) were due apparently to the hemolytic streptococcus which seems to be playing such an important rôle in the morbidity and mortality rates in some of the camps.

REPORT OF A SURVEY FOR MEASLES NONIMMUNES.

(Notes from the naval training station, Great Lakes, Ill.)

Between January 5 and 10, 1918, a thorough canvass was made of the First, Second, and Third Regiments to ascertain the number of men who had not had measles. Each man who was in doubt about the matter was carefully questioned, and it is thought that the list of nonimmunes is, therefore, accurate. In the First Regiment, with a complement of 1,450 men, 269 nonimmunes were found. In the Second Regiment, with a complement of 1,750 men, 245 nonimmunes were found. In the Third Regiment, with a complement of 1,641 men, 391 nonimmunes were found.

At the suggestion of the medical officer the naval hospital was visited and all patients with measles and German measles were interviewed in order to determine the number of cases of measles admitted from the regiments and to ascertain the number of men who were having their second attack. Each man was questioned as to the onset of his present illness, and a diagnosis made before the patient was asked if he had ever had measles before. One patient only was found who apparently was having his second attack of measles. Here, however, there was room for disagreement, as the doctor in charge of the ward believed the man to be suffering from German measles. The history of a previous attack of measles was conclusive. Ninety-three cases were interviewed, 47 of true measles and 46 of German measles.

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The work involved in the sanitation of extra cantonment zones was undertaken shortly after the war by the United States Public Health Service in cooperation with State and local health authorities.

The importance of this work can not be overestimated. Every focus of disease in a civil community jeopardizes the health of men in the military establishments, and tends to render ineffective other individuals who should be available for military duty. On the other hand, disease on the military reservation may be introduced into civil communities, thereby menacing the health and lives of civilians. To meet the situation there is required a well-organized health department in the locality, with adequate funds to carry on its activities. It is unfortunate though none the less true, that many civil communities in the United States are decidedly deficient in organization, in money, and in men with which to carry on public health work, and it is for this reason that it became necessary for the Federal Public Health Service to take an unusually active part in local health matters in the present emergency.

The officer of the Public Health Service placed in charge of extra cantonment work is in most instances delegated by the State to be the representative of the State board of health in the locality, and usually he is appointed by the locality to be its health officer. Among his first duties, he should secure the passage of adequate ordinances or regulations; insist upon the reporting of diseases with promptness and thoroughness, and organize a health department capable of performing its duties efficiently with money supplied by the locality as well as by financial and other assistance received from the United States Government.

The activities of the organization comprise the control of communicable diseases, including the establishment and operation of venereal clinics and isolation hospitals; health supervision of schools; control of the milk supply; supervision over the water supply, as to the purity of water; antimalarial work; supervision over the disposal of sewage, garbage, and other wastes; and inspection of places manufacturing or selling food or food products, etc.

In each organization there are employed medical officers, sanitary engineers, public health nurses, bacteriologists, technical assistants, and sanitary inspectors. Work of this nature has been carried on in the vicinity of the naval establishments at Newport News, Norfolk, Hampton Roads, and Quantico, Va., Key West, Fla., and the navy yard, Puget Sound, Wash. In some instances State authority has been delegated to medical officers of the Navy. More recently arrangements have been made with the States of Maine and New Hampshire to carry on more intensive work in the vicinity of the Portsmouth Navy Yard. The sanitation officers of the Navy have made numerous inspections in areas surrounding naval stations to determine sanitary conditions and the status of public health work in the locality, and they have very generally met with splendid cooperation on the part of local authorities.

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Medical officers are invited to submit to the bureau any suggestions that they believe may be useful in extending the scope of this bulletin to render it of greater value. Questions in the field of preventive medicine will be welcomed and will be answered in accordance with the best available authority.

Criticism of anything contained in the body of the bulletin or in any of the statistical tables will be appreciated. In referring to any article appearing in a bulletin, reference should be made to the letters and numbers in the upper right-hand corner, as well as to the serial number.

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The following statistics are furnished for the information of medical officers:

The annual rates shown in the tables are obtained in the following way: The figure representing the total original admissions to the sick list or the number of deaths reported during the week is multiplied by 1,000 and divided by the complement. The quotient is then multiplied by 52. As weekly figures always fluctuate widely, *caution must be used in interpreting annual rates calculated on a weekly basis.* In the following tables it may be taken for granted where no figures appear that the disease did not occur, or, if in reference to hospitals, that no case was admitted.

TABLE 1.—ADMISSIONS TO SICK LIST AND ANNUAL ADMISSION RATES, TRAINING STATIONS AND CAMPS, WEEK ENDED APR. 27, 1918.

| | |
|---|---|
| Total strength men at training stations and camps | 118,090 |
| Total admissions all causes | 1,867 |
| Admission rate per thousand all causes | 821.60 |
| Average rate per thousand all causes since Jan. 1, 1918 | 1,199.63 |
| Total admissions for venereal diseases | 208 |
| Total admission rate per thousand venereal diseases | 91.52 |
| Average rate per thousand venereal diseases since Jan. 1, 1918 | 98.92 |

| Stations. | Total admissions, all causes. | Annual rate. | Average rate since Jan. 1, 1918. | Total admissions, venereal. | Annual rate. | Average rate since Jan. 1, 1918. | Complement. |
|---|---|---|---|---|---|---|---|
| Great Lakes Training Station | 275 | 609.44 | 1,202.02 | 61 | 134.68 | 89.92 | 23,462 |
| Naval base station (Hampton Roads) | 66 | 658.84 | 1,388.79 | 8 | 79.56 | 69.88 | 5,206 |
| Newport Training station | 156 | 1,040.52 | 1,047.21 | 14 | 93.08 | 72.24 | 7,795 |
| San Francisco Training Station | 69 | 1,106.56 | 1,549.44 | 6 | 96.20 | 107.21 | 3,241 |
| Bumkin Island, Boston | 12 | 849.68 | 1,879.97 | 3 | 212.16 | 80.75 | 734 |
| Charleston, S. C | 63 | 1,180.40 | 1,370.78 | 6 | 112.32 | 101.92 | 2,775 |
| Hingham, Mass | 32 | 1,657.24 | 1,737.99 | ..... | ..... | 73.88 | 1,004 |
| Key West, Fla | 30 | 1,202.76 | 1,085.95 | 4 | 160.16 | 107.85 | 1,297 |
| Mare Island, Cal | 32 | 826.28 | 1,808.49 | ..... | ..... | 123.77 | 2,013 |
| Naval training camp (San Pedro, Cal.) | 12 | 468.52 | 857.23 | ..... | ..... | 124.98 | 1,331 |
| Naval training camp (Seattle, Wash.) | 6 | 386.36 | 493.92 | 2 | 128.44 | 57.16 | 807 |
| New Orleans, La | 153 | 5,559.32 | 1,337.74 | 8 | 290.68 | 143.00 | 1,431 |
| Pelham Park, N. Y | 49 | 511.68 | 645.41 | 5 | 52.00 | 38.35 | 4,976 |
| Pensacola, Fla | 52 | 1,222.00 | 1,617.01 | 1 | 23.40 | 158.60 | 2,212 |
| San Diego, Cal | 128 | 1,915.16 | 2,360.46 | 8 | 104.52 | 84.17 | 3,475 |
| Receiving ship, Boston (Commonwealth Pier) | 13 | 240.24 | 908.86 | 1 | 18.20 | 148.61 | 2,789 |
| Receiving ship, New York (including Ellis Island) | 117 | 1,048.84 | 1,151.00 | 10 | 89.44 | 137.92 | 5,800 |
| Receiving ship, Norfolk (including St. Helena) | 87 | 646.88 | 1,051.44 | 18 | 133.64 | 140.64 | 6,992 |
| Receiving ship, Philadelphia, Pa | 50 | 483.60 | 817.58 | 11 | 106.08 | 197.96 | 5,376 |
| Receiving ship, including training camp (Puget Sound, Wash.) | 11 | 396.24 | 778.50 | 4 | 144.04 | 136.20 | 1,442 |
| Marine barracks, Paris Island, S. C | 147 | 1,241.20 | 1,245.33 | 3 | 24.96 | 60.59 | 6,161 |
| Marine barracks, Quantico, Va | 59 | 681.72 | 989.78 | 4 | 45.76 | 82.27 | 4,500 |
| Navy yard, including Marine barracks (Puget Sound, Wash.) | 5 | 302.64 | 696.34 | ..... | ..... | 51.27 | 858 |
| Wissahickon Barracks, Cape May, N. J | 43 | 1,306.76 | 1,588.41 | ..... | ..... | 90.04 | 1,711 |
| Submarine base, New London, Conn | 32 | 1,048.32 | 1,247.87 | 3 | 98.28 | 105.84 | 1,587 |
| Submarine base, San Pedro, Cal | 8 | 512.72 | 1,147.18 | 4 | 256.36 | 90.84 | 811 |
| Dunwoody Industrial Institute (Minneapolis) | 11 | 788.84 | 810.86 | ..... | ..... | 100.91 | 725 |
| Naval Radio School, Harvard University | 30 | 375.96 | 912.72 | 3 | 37.44 | 78.52 | 4,145 |
| Newport (R. I.) section (Cloyne Field) | 20 | 650.00 | 1,839.66 | 1 | 32.24 | 43.74 | 1,600 |
| Section No. 6, Third Naval District (Bensonhurst) | 21 | 1,257.88 | 1,323.92 | 5 | 299.52 | 60.38 | 868 |
| Section base, Cape May, N. J | 10 | 683.28 | 964.78 | ..... | ..... | 30.49 | 761 |
| Section base, New London, Conn | 20 | 284.44 | 510.75 | ..... | ..... | 42.58 | 3,650 |
| Miami Air Station, Fla | 4 | 217.36 | 392.28 | ..... | ..... | 25.79 | 955 |
| Armed draft detail, N. Y | 44 | 408.20 | 434.25 | 15 | 138.84 | 161.27 | 5,600 |

TABLE 2.—ADMISSION BY DISEASES, AND ANNUAL RATE PER 1,000, WEEK ENDED APR. 27, 1918.

| Diseases. | Great Lakes Training Station (23,462). | | Naval base station, Hampton Roads (5,206). | | Newport Training Station (7,795). | | San Francisco Training Station (3,241). | | Receiving ship, Norfolk, including St. Helena (6,992). | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. |
| Cerebrospinal fever | | | | | 1 | 6.24 | | | | |
| Diphtheria | 3 | 6.24 | | | | | | | | |
| Malaria | 1 | 2.18 | 2 | 19.76 | | | | | | |
| German measles | 1 | 2.18 | | | | | 2 | 31.72 | | |
| Measles | 6 | 13.00 | 1 | 9.88 | 7 | 46.28 | 3 | 47.84 | | |
| Mumps | 12 | 26.52 | 4 | 39.52 | 7 | 46.28 | 6 | 96.20 | | |
| Pneumonia | 11 | 23.92 | 1 | 9.88 | 1 | 6.24 | | | 2 | 14.56 |
| Poliomyelitis | | | | | | | | | | |
| Scarlet fever | 8 | 17.68 | | | | | 2 | 31.72 | | |
| Smallpox | | | | | | | | | | |
| Typhoid | | | | | | | | | | |
| Chancroid | 8 | 17.68 | 2 | 19.76 | | | | | 4 | 23.94 |
| Gonococcus infection | 48 | 106.08 | 5 | 49.92 | 14 | 93.08 | 6 | 96.20 | 13 | 96.20 |
| Syphilis | 5 | 10.92 | 1 | 9.88 | | | | | 1 | 7.28 |

| Diseases. | Bumkin Island, Boston (734). | | Charleston, S. C. (2,775). | | Hingham, Mass. (1,004). | | Key West, Fla. (1,297). | | Mare Island, Cal. (2,013). | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. |
| Cerebrospinal fever | | | | | | | | | | |
| Diphtheria | | | | | | | | | | |
| Malaria | | | | | | | | | | |
| German measles | | | | | | | 3 | 120.12 | | |
| Measles | | | 5 | 93.60 | | | | | | |
| Mumps | 1 | 70.72 | 1 | 18.72 | | | 4 | 160.16 | 4 | 102.96 |
| Pneumonia | | | | | | | | | | |
| Poliomyelitis | | | | | | | | | | |
| Scarlet fever | | | | | | | | | | |
| Smallpox | | | | | | | | | | |
| Typhoid | | | | | | | | | | |
| Chancroid | | | | | | | 1 | 40.04 | | |
| Gonococcus infection | 3 | 212.16 | 5 | 93.60 | | | 3 | 120.12 | | |
| Syphilis | | | 1 | 18.72 | | | | | | |

| Diseases. | Naval training camp, San Pedro, Cal. (1,331). | | Naval training camp, Seattle, Wash. (807). | | New Orleans, La. (1,431). | | Pelham Park, N.Y. (4,976). | | Pensacola, Fla. (2,212). | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. |
| Cerebrospinal fever | | | | | | | | | 1 | 23.40 |
| Diphtheria | | | | | | | | | | |
| Malaria | | | | | 3 | 108.68 | | | | |
| German measles | | | 1 | 63.96 | | | 1 | 10.40 | | |
| Measles | 4 | 156.00 | | | | | | | | |
| Mumps | | | | | | | 6 | 62.40 | | |
| Pneumonia | | | | | 1 | 35.88 | 2 | 20.80 | | |
| Poliomyelitis | | | | | | | | | | |
| Scarlet fever | | | | | | | | | | |
| Smallpox | | | | | | | | | | |
| Typhoid | | | | | | | | | | |
| Chancroid | | | | | | | | | | |
| Gonococcus infection | | | 2 | 128.44 | 7 | 254.28 | 4 | 41.60 | 1 | 23.40 |
| Syphilis | | | | | 1 | 35.88 | 1 | 10.40 | | |

TABLE 2.—ADMISSION BY DISEASES, AND ANNUAL RATE PER 1,000, WEEK ENDED APR. 27, 1918—Con.

| Diseases. | San Diego, Cal. (3,475). | | Receiving ship, Boston, Commonwealth Pier (2,789). | | Receiving ship, New York, including Ellis Island (5,800). | | Receiving ship, Philadelphia, Pa. (5,376). | | Receiving ship, including training camp, Puget Sound, Wash. (1,442). | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. |
| Cerebrospinal fever | | | | | 1 | 8.84 | | | | |
| Diphtheria | | | 1 | 18.20 | 12 | 107.12 | 1 | 9.36 | | |
| Malaria | | | | | | | 1 | 9.36 | | |
| German measles | | | | | | | | | | |
| Measles | | | | | 1 | 8.84 | | | 2 | 71.76 |
| Mumps | 4 | 59.80 | | | | | 2 | 19.24 | 1 | 35.88 |
| Pneumonia | 3 | 44.72 | | | 2 | 17.68 | 4 | 38.48 | | |
| Poliomyelitis | | | | | | | | | | |
| Scarlet fever | | | | | 8 | 71.24 | | | | |
| Smallpox | | | | | | | | | | |
| Typhoid | | | | | | | | | | |
| Chancroid | | | | | | | | | | |
| Gonococcus infection | 8 | 104.52 | 1 | 18.20 | 4 | 35.36 | 9 | 86.84 | 4 | 144.04 |
| Syphilis | | | | | 6 | 53.56 | 2 | 19.24 | | |

| Diseases. | Marine barracks, Paris Island, S. C. (6,161). | | Marine barracks, Quantico, Va. (4,500). | | Navy yard, including marine barracks, Puget Sound, Wash. (858). | | Wissahickon Barracks, Cape May, N. J. (1,711). | | Submarine base, New London, Conn. (1,587). | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. |
| Cerebrospinal fever | | | | | | | 1 | 30.16 | | |
| Diphtheria | | | | | | | | | | |
| Malaria | | | 1 | 11.44 | | | | | | |
| German measles | 2 | 16.64 | 3 | 34.32 | | | | | | |
| Measles | 2 | 16.64 | | | | | 3 | 91.00 | 1 | 32.76 |
| Mumps | 4 | 33.28 | 1 | 11.44 | | | | | 1 | 32.76 |
| Pneumonia | 1 | 8.32 | | | | | 1 | 30.16 | 2 | 65.52 |
| Poliomyelitis | | | | | | | | | | |
| Scarlet fever | 1 | 8.32 | | | | | 1 | 30.16 | | |
| Smallpox | | | | | | | | | | |
| Typhoid | | | | | | | | | | |
| Chancroid | | | | | | | | | 1 | 32.76 |
| Gonococcus infection | 1 | 8.32 | 4 | 45.76 | | | | | 2 | 65.52 |
| Syphilis | 2 | 16.64 | | | | | | | | |

| Diseases. | Submarine base, San Pedro, Cal. (811). | | Dunwoody Industrial Institute, Minneapolis (725). | | Naval Radio School, Harvard University (4,145). | | Newport, R. I., section Cloyne Field (1,600). | | Section No. 6, Third Naval District, Bensonhurst (868). | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. |
| Cerebrospinal fever | | | | | | | | | | |
| Diphtheria | | | | | 3 | 37.44 | | | | |
| Malaria | | | | | | | | | | |
| German measles | | | | | | | | | | |
| Measles | | | | | | | 2 | 65.00 | | |
| Mumps | | | 4 | 286.52 | 1 | 12.48 | | | | |
| Pneumonia | | | | | 1 | 12.48 | | | | |
| Poliomyelitis | | | | | | | | | | |
| Scarlet fever | | | | | | | | | | |
| Smallpox | | | | | | | | | | |
| Typhoid | | | | | | | | | | |
| Chancroid | 1 | 63.96 | | | | | | | | |
| Gonococcus infection | 3 | 191.88 | | | 2 | 24.96 | 1 | 32.24 | 5 | 299.52 |
| Syphilis | | | | | 1 | 12.48 | | | | |

TABLE 2.—ADMISSION BY DISEASES, AND ANNUAL RATE PER 1,000, WEEK ENDED APR. 27, 1918—Con.

| Diseases. | Section base, Cape May, N. J. (761). | | Section base, New London, Conn. (3,650). | | Miami Air Station, Fla. (955). | | Armed draft detail, New York, N. Y. (5,600). | |
|---|---|---|---|---|---|---|---|---|
| | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. | Number of cases. | Annual rate per 1,000. |
| Cerebrospinal fever | | | | | | | | |
| Diphtheria | | | | | | | 1 | 8.84 |
| Malaria | | | | | | | | |
| German measles | | | | | | | | |
| Measles | | | | | | | 1 | 8.84 |
| Mumps | | | | | | | | |
| Pneumomia | | | | | 2 | 108.68 | | |
| Poliomyelitis | | | | | | | | |
| Scarlet fever | | | 1 | 14.04 | | | 2 | 18.20 |
| Smallpox | | | | | | | | |
| Typhoid | | | | | | | | |
| Chancroid | | | | | | | 2 | 18.20 |
| Gonococcus infection | | | | | 1 | 54.08 | 8 | 73.84 |
| Syphilis | | | | | | | 5 | 46.28 |

TABLE 3.—SUMMARY OF REPORTS FROM NAVAL HOSPITALS AND SICK QUARTERS, WEEK ENDED APR. 20, 1918.

| Hospitals. | Cerebrospinal fever. | | Diphtheria. | | Malaria. | | German measles. | | Measles. | | Mumps. | | Pneumonia. | | Scarlet fever. | | All causes. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Under treatment. | Admitted. | Under treatment. | Admitted. | Under treatemnt. | Admitted. | Under treatment. | Admitted. | Under treatment. | Admitted. | Under treatment. | Admitted. | Under treatment. | Admitted. | Under treatment. | Admitted. | Under treatment. | Admitted. | Discharged. |
| Annapolis | | | | | | | | | 1 | 1 | 30 | 17 | 5 | 1 | 5 | | 119 | 57 | 78 |
| Cape May | 2 | | | | 1 | 1 | | | | | 1 | 1 | 12 | | 3 | 1 | 67 | 10 | 11 |
| Charleston | | | | | 7 | 2 | 2 | 1 | 7 | 6 | 10 | 6 | 6 | 1 | | | 242 | 113 | 106 |
| Chelsea | 10 | | 39 | 2 | 1 | | 3 | | 8 | | 30 | 13 | 39 | 5 | 13 | 4 | 760 | 149 | 186 |
| Great Lakes | 36 | 1 | 6 | 2 | | | 1 | 1 | 8 | 5 | 24 | 7 | 181 | 23 | 57 | 8 | 784 | 140 | 163 |
| Hampton Roads | 7 | 1 | 2 | | 2 | 1 | | | 7 | 1 | 38 | 9 | 28 | 2 | 17 | | 270 | 44 | 71 |
| League Island | 1 | | | | | | | | | | | | 32 | 3 | | | 145 | 49 | 37 |
| Mare Island | 6 | | | | 2 | | | | 18 | 9 | 32 | 12 | 14 | 3 | 4 | 1 | 339 | 56 | 98 |
| New London | | | | | | | 2 | 2 | 5 | 2 | | | 5 | | 9 | 1 | 92 | 29 | 17 |
| Newport | 17 | 3 | | | | | 8 | 2 | 22 | 9 | 26 | 10 | 40 | 7 | 3 | 1 | 629 | 178 | 145 |
| New York | 2 | | 160 | 55 | | | 2 | | 17 | 5 | 64 | 26 | 92 | 10 | 49 | 10 | 1,815 | 428 | 350 |
| Norfolk | 29 | 1 | 29 | 15 | 1 | 1 | 4 | 3 | 34 | 8 | 121 | 42 | 82 | 11 | 27 | 6 | 1,446 | 350 | 325 |
| New Orleans | | | 3 | | 18 | 13 | | | 2 | 2 | 4 | 2 | | | | | 70 | 45 | 35 |
| Paris Island | 4 | 1 | | | | | | | | | 1 | 1 | 1 | 1 | | | 78 | 25 | 21 |
| Pelham Park | | | 1 | | | | 4 | 4 | | | 3 | 2 | 14 | | 6 | | 92 | 24 | 37 |
| Pensacola | 1 | | | | 1 | | | | 2 | | 12 | 2 | 3 | 1 | | | 72 | 29 | 27 |
| Philadelphia | | | 19 | 1 | | | | | 11 | 1 | 18 | 6 | 15 | 2 | 15 | 4 | 354 | 61 | 101 |
| Portsmouth | 2 | | 28 | 27 | | | | | | | 6 | 2 | 13 | 2 | | | 230 | 123 | 63 |
| Puget Sound | | | | | | | | | 2 | 1 | 5 | | 2 | | 1 | | 102 | 25 | 34 |
| Quantico | 5 | 1 | | | | | 2 | 1 | 3 | 1 | 28 | 9 | 1 | | 1 | | 95 | 35 | 66 |
| San Diego [1] | 2 | | | | | | | | | | 40 | 6 | 9 | 7 | | | 277 | 427 | 392 |
| Washington | | | 3 | 2 | | | | | 2 | | 1 | 1 | | | | | 138 | 28 | 36 |
| Total | 124 | 8 | 290 | 104 | 33 | 18 | 28 | 14 | 149 | 50 | 494 | 174 | 594 | 79 | 210 | 36 | 8,216 | 2,425 | 2,399 |

[1] 326 cases of influenza admitted.

TABLE 4.—NUMBER OF ADMISSIONS AND ANNUAL RATES, ENTIRE NAVY, WEEK ENDED APR. 20, 1918.

[Rates based on an estimated complement of 360,000.]

| Class. | Number of admissions. | Annual rate per 1,000. | Class. | Number of admissions. | Annual rate per 1,000. |
|---|---|---|---|---|---|
| Diseases of blood | 1 | ..... | Diseases of nervous system | 40 | ..... |
| Diseases of circulatory system | 52 | ..... | Diseases of respiratory system | 508 | 73.32 |
| Diseases of digestive system | 880 | ..... | Diseases of skin, hair, and nails | 48 | ..... |
| Diseases of ductless glands and spleen | 7 | ..... | Hernia | 52 | ..... |
| Diseases of ear | 94 | ..... | Miscellaneous diseases and conditions | 436 | ..... |
| Diseases of eye and adnexa | 69 | ..... | Parasites (fungi and certain animal parasites) | 56 | ..... |
| Diseases of genito-urinary system (nonvenereal) | 138 | ..... | Tumors | 1 | ..... |
| Diseases of infective type (nonvenereal) | 2,331 | 336.44 | Injuries | 377 | ..... |
| Diseases of infective type (venereal) | 782 | 112.84 | Poisons | 19 | ..... |
| Diseases of lymphatic system | 41 | ..... | Total | 6,063 | 875.68 |
| Diseases of mind | 34 | ..... | Chancroid infection ..... 175 | | |
| Diseases of motor system | 97 | ..... | Gonococcus infection ..... 491 | | |
| | | | Syphilis ..... 116 | | |

TABLE 5.—DEATHS REPORTED, ENTIRE NAVY, WEEK ENDED APR. 27, 1918.

[Rates based on an estimated complement of 360,000.]

| | |
|---|---|
| Cerebrospinal fever | 2 |
| Meningitis, cerebrospinal | 3 |
| Diphtheria | 1 |
| Measles | 1 |
| Influenza | 2 |
| Pneumonia, lobar | 19 |
| Pneumonia, broncho | 1 |
| Tuberculosis, chronic pulmonary | 1 |
| Malignant growth | 1 |
| Other diseases | 6 |
| Drowning | 1 |
| Casualty in action | 1 |
| Other accidents and injuries | 28 |
| Total | 67 |
| Annual death rate per thousand, all causes | 9.4 |
| Annual death rate per thousand, diseases only | 5.3 |



WASHINGTON : GOVERNMENT PRINTING OFFICE : 1918